Central Inverters

12-250 kW

HIGHLIGHTS

- **With low frequency insulating transformer**
- **Full rated power up to 45 °C**
- **Colour LCD touch screen display with datalogger functions**
- **Suitable for operating with modules that require the earthing of a pole**

Sirio Central inverters allow direct connection to the low voltage grid ensuring the galvanic separation compared to direct current installations. The generous rating of the transformer and the other inverter components provides a return of the highest among the units of the same category.

Maximum energy and safety

The Maximum Power Point Tracking (MPPT) research algorithm implemented in the control system of Sirio Central inverters allows full use of the photovoltaic generator in any radiation and temperature conditions, making the plant work constantly at maximum efficiency. In the absence of solar radiation the converter goes on standby and resumes normal operation when there is radiation again. This feature reduces self-consumption to a minimum and maximizes energy efficiency. The use of speed-controlled fans helps to optimize the overall efficiency of the inverter. Fan operation that is linked to the

temperature also increases the expected lifespan and reduces costs incurred for extraordinary maintenance.
All these design features, the careful choice of components and guaranteed quality of production according to ISO9001 standards make the three-phase inverters Sirio extremely efficient and reliable and guarantee maximum energy production.

Thermal derating

Derating as a function of temperature aimed to safeguard against overheating inverter semiconductors in the case of environments with temperatures exceeding installation specifications or for forced ventilation faults, without causing a complete block of the inverter itself. Sirio Central models ensure rated power output up to 45°C environment. If this threshold is exceeded, the inverter gradually decreases the power fed into the network in such a way as to maintain heat sink temperature within the maximum limit. Once back in the range of thermal normal operation, the inverter restores the optimal working point, again ensuring maximum power transfer.

Easy installation and maintenance

The footprint of these devices has been considerably reduced and there is no need to leave space at the side or back of the equipment since the electronics and power components are fully accessible from the front. Fully automatic operation ensures ease of use and facilitates installation and startup, thus avoiding installation and configuration errors which could lead to failures or reduced plant productivity.

Customized solutions

AROS is able on request to supply Sirio Central inverters specific to the client's needs.
Available options include the integrated isolation control and the pole/earth connection kit (positive or negative) that is required for some kinds of photovoltaic modules.

User Interface

Sirio Central inverters provide a series of new user interfaces composed of an LCD colour touch screen in a convenient 4.3" format. The millions of colours and quantity of features greatly enrich the user's interaction experience with the solar inverter.
Intuitive icons and brief messages in the set language guide users through the simple menu structure, allowing them to access all reference, configuration and inverter control features. In particular, it is possible to view a daily energy production graph and the instantaneous value of power produced, verify module temperatures and the measurements of any installed analogue sensors.

The archive section allows viewing and analysis of historical data, crossing measurements as desired (no longer two sizes at a time). By scrolling a finger along the screen, users can query values recorded in previous days, including in monthly or annual intervals, and the graphs displayed can be sent via e-mail. Internal storage allows for the archiving of about 5 years of data. However, if necessary, it is possible to delete older years by means of a special feature. Historical data produced by the inverter and that of the system card can be saved on a USB flash drive.

The device also allows users to change the €/KWh ratio, adjust display brightness, change the system date and time, assign an identification and label to the plant it belongs to, configure and customise up to 4 external analogue sensors. It also allows e-mails to be sent (for which you can set the frequency) with production data and graphs and, in the case of abnormalities, any malfunction or ignition failure alarms.

Finally, via special counters in the Info section, users can consult data regarding total produced energy, the overall hours of operation, the economic return of the plan and other technical parameters, including the amount of memory used for historical data. The graphic interface is available in Italian, English, French, Spanish and German.

Network access

The touch screen device offers many communication possibilities if a connection to the local network exists.
The inverter is compatible both with PVSER proprietary protocol on the network and with ModBUS/TCP, thus offering easy insertion in any management BMS or data analysis using an Ethernet network.
The display software can be easily and quickly updated. Moreover, with a freeware software (VNC), users can remotely view the inverter screen or interact with it from their computer or mobile device.

COMMUNICATION

Display
Colour LCD touch screen
Communication interface
Ethernet, USB, 2xRS232, 2 inputs for remote controls (inverter trip and EPO) and 3 operating status signal relays. RS485 optional (slot version)
Protocol
ModBUS and ModBUS/TCP

MODEL	SIRIO K12	SIRIO K15	SIRIO K18	SIRIO K25	SIRIO K33
Rated AC power	12 KVA	15 KVA	18 KVA	25 KVA	33 KVA
Maximum AC power	12 KW (cosφ=1)	15 KW (cosφ=1)	18 KW (cosφ=1)	25 KW (cosφ=1)	33 KW (cosφ=1)
INPUT					
Maximum DC voltage in an open circuit	800 Vdc				
MPPT at full rating range	330 ÷ 700 Vdc				
Operating interval	330 ÷ 700 Vdc				
Maximum input current	36 Adc	54 Adc	63 Adc	80 Adc	105 Adc
Threshold voltage for grid supply	390 Vdc				
Ripple voltage	<1%				
Inputs number	1				
MPPT number	1				
DC Connectors	Screw terminals				
OUTPUT					
Operating voltage	400 Vac				
Operating range	340 ÷ 460 Vac (1)				
Maximum power range	340 ÷ 460 Vac				
Frequency range	47,5 ÷ 51,5 Hz (1)				
Frequency range setup	47 ÷ 53 Hz				
Rated current	17,3 Aac	21,7 Aac	26 Aac	36 Aac	48 Aac
Maximum current	22,4 Aac	28,1 Aac	33 Aac	46 Aac	60 Aac
Short cirtuit current contribution	34 Aac	42 Aac	50 Aac	68 Aac	90 Aac
Total Harmonic Distorsion (THDi)	<3%				
Power factor	from 0,9 ind. to 0,9 cap.(1)				
Galvanic separation	Trafo BF				
AC connectors	Screw terminals				
SYSTEM					
Maximum efficiency	95,8%				
European efficiency	94,8%			94,9%	
Stand-by consumption	<32W				
Overnight consumption	<32W				
Built-in protections	Automatic circuit breaker AC side - Switch-disconnectors DC side				
Protection during stand-by operations	Yes				
Hearth leakage detection	Yes				
Heat dissipation	Controlled fans				
Operating temperature	-20°C ÷ 45°C (no derating)				
Storage temperature	-20°C ÷ 70°C				
Humidity	5 ÷ 95% non-condensing				
Weight	310 Kg	320 Kg	340 Kg	350 Kg	380 Kg
STANDARDS					
EMC	EN61000-6-3, EN61000-6-2, EN61000-3-11, EN61000-3-12				
Safety	EN62109-1, EN62109-2				
Directives	Low Voltage Directive: 2006/95/EC, EMC Directive: 2004/108/EC				
Grid management	CEI 0-21, CEI 0-16, A70, VDE 0126-1-1, G59/2, Real Decreto 413/2014, PO12.3				

NOTE: For mechanical drawings and graphics of efficiency, refer to pag. 63

(1) These values can vary depending on the local regulations.

MODEL	SIRIO K40	SIRIO K64	SIRIO K80	SIRIO K100	SIRIO K200
Rated AC power	40 KVA	64 KVA	80 KVA	100 KVA	200 KVA
Maximum AC power	40 KW (cosφ=1)	64 KW (cosφ=1)	80 KW (cosφ=1)	100 KW (cosφ=1)	200 KW (cosφ=1)
INPUT					
Maximum DC voltage in an open circuit	800 Vdc				
MPPT at full rating range	330 ÷ 700 Vdc				
Operating interval	330 ÷ 700 Vdc				
Maximum input current	130 Adc	205 Adc	260 Adc	320 Adc	650 Adc
Threshold voltage for grid supply	390 Vdc				
Ripple voltage	<1%				
Inputs number	1				
MPPT number	1				
DC Connectors	Screw terminals	Busbar			
OUTPUT					
Operating voltage	400 Vac				
Operating range	340 ÷ 460 Vac (1)				
Maximum power range	340 ÷ 460 Vac				
Frequency range	47,5 ÷ 51,5 Hz (1)				
Frequency range setup	47 ÷ 53 Hz				
Rated current	58 Aac	92 Aac	115 Aac	145 Aac	289 Aac
Maximum current	73 Aac	117 Aac	146 Aac	182 Aac	364 Aac
Short cirtuit current contribution	110 Aac	175 Aac	219 Aac	274 Aac	546 Aac
Total Harmonic Distorsion (THDi)	<3%				
Power factor	from 0,9 ind. to 0,9 cap.(1)				
Galvanic separation	Trafo BF				
AC connectors	Screw terminals	Busbar			
SYSTEM					
Maximum efficiency	95,8%	96,1%			96,2%
European efficiency	95%			95,1%	95,2%
Stand-by consumption	<32W				
Overnight consumption	<32W				
Built-in protections	Automatic circuit breaker AC side - Switch-disconnectors DC side				
Protection during stand-by operations	Yes				
Hearth leakage detection	Yes				
Heat dissipation	Controlled fans				
Operating temperature	-20°C ÷ 45°C (no derating)				
Storage temperature	-20°C ÷ 70°C				
Humidity	5 ÷ 95% non-condensing				
Weight	420 Kg	600 Kg	650 Kg	720 Kg	1580 Kg
STANDARDS					
EMC	EN61000-6-3, EN61000-6-2, EN61000-3-11, EN61000-3-12				
Safety	EN62109-1, EN62109-2				
Directives	Low Voltage Directive: 2006/95/EC, EMC Directive: 2004/108/EC				
Grid management	CEI 0-21, CEI 0-16, A70, VDE 0126-1-1, G59/2, Real Decreto 413/2014, PO12.3				CEI 0-21, CEI 0-16, A70, Real Decreto 413/2014, PO12.3

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MODEL	SIRIO K25 HV	SIRIO K33 HV	SIRIO K40 HV	SIRIO K64 HV	SIRIO K80 HV
Rated AC power	25 KVA	33 KVA	40 KVA	64 KVA	80 KVA
Maximum AC power	25 KW (cosφ=1)	33 KW (cosφ=1)	40 KW (cosφ=1)	64 KW (cosφ=1)	80 KW (cosφ=1)
INPUT					
Maximum DC voltage in an open circuit	880 Vdc				
MPPT at full rating range	450 ÷ 760 Vdc				
Operating interval	450 ÷ 760 Vdc				
Maximum input current	59 Adc	79 Adc	98 Adc	157 Adc	196 Adc
Threshold voltage for grid supply	540 Vdc				
Ripple voltage	<1%				
Inputs number	1				
MPPT number	1				
DC Connectors	Screw terminals			Busbar	
OUTPUT					
Operating voltage	400 Vac				
Operating range	340 ÷ 460 Vac (1)				
Maximum power range	340 ÷ 460 Vac				
Frequency range	47,5 ÷ 51,5 Hz (1)				
Frequency range setup	47 ÷ 53 Hz				
Rated current	36 Aac	48 Aac	58 Aac	92 Aac	115 Aac
Maximum current	46 Aac	60 Aac	73 Aac	117 Aac	146 Aac
Short cirtuit current contribution	68 Aac	90 Aac	110 Aac	175 Aac	219 Aac
Total Harmonic Distorsion (THDi)	<3%				
Power factor	from 0,9 ind. to 0,9 cap.(1)				
Galvanic separation	Trafo BF				
AC connectors	Screw terminals			Busbar	
SYSTEM					
Maximum efficiency	96,4%	96,3%	96,2%	96,1%	
European efficiency	95,3%			94,9%	95%
Stand-by consumption	<32W				
Overnight consumption	<32W				
Built-in protections	Automatic circuit breaker AC side - Switch-disconnectors DC side				
Protection during stand-by operations	Yes				
Hearth leakage detection	Yes				
Heat dissipation	Controlled fans				
Operating temperature	-20°C ÷ 45°C (no derating)				
Storage temperature	-20°C ÷ 70°C				
Humidity	5 ÷ 95% non-condensing				
Weight	350 Kg	380 Kg	420 Kg	600 Kg	650 Kg
STANDARDS					
EMC	EN61000-6-3, EN61000-6-2, EN61000-3-11, EN61000-3-12				
Safety	EN62109-1, EN62109-2				
Directives	Low Voltage Directive: 2006/95/EC, EMC Directive: 2004/108/EC				
Grid management	CEI 0-21, CEI 0-16, A70, VDE 0126-1-1, G59/2, Real Decreto 413/2014, PO12.3				

NOTE: For mechanical drawings and graphics of efficiency, refer to pag. 63

(1) These values can vary depending on the local regulations.

MODEL	SIRIO K100 HV	SIRIO K200 HV	SIRIO K250 HV
Rated AC power	100 KVA	200 KVA	250 KVA
Maximum AC power	100 KW (cosφ=1)	200 KW (cosφ=1)	250 KW (cosφ=1)
INPUT			
Maximum DC voltage in an open circuit	880 Vdc		
MPPT at full rating range	450 ÷ 760 Vdc		
Operating interval	450 ÷ 760 Vdc		
Maximum input current	245 Adc	500 Adc	590 Adc
Threshold voltage for grid supply	540 Vdc		
Ripple voltage	<1%		
Inputs number	1		
MPPT number	1		
DC Connectors	Busbar		
OUTPUT			
Operating voltage	400 Vac		
Operating range	340 ÷ 460 Vac (1)		
Maximum power range	340 ÷ 460 Vac		
Frequency range	47,5 ÷ 51,5 Hz (1)		
Frequency range setup	47 ÷ 53 Hz		
Rated current	145 Aac	289 Aac	361 Aac
Maximum current	182 Aac	364 Aac	420 Aac
Short cirtuit current contribution	274 Aac	546 Aac	630 Aac
Total Harmonic Distorsion (THDi)	<3%		
Power factor	from 0,9 ind. to 0,9 cap.(1)		
Galvanic separation	Trafo BF		
AC connectors	Busbar		
SYSTEM			
Maximum efficiency	96,1%	96,3%	
European efficiency	95,1%	95,2%	95,3%
Stand-by consumption	<32W		
Overnight consumption	<32W		
Built-in protections	Automatic circuit breaker AC side - Switch-disconnectors DC side		
Protection during stand-by operations	Yes		
Hearth leakage detection	Yes		
Heat dissipation	Controlled fans		
Operating temperature	-20°C ÷ 45°C (no derating)		
Storage temperature	-20°C ÷ 70°C		
Humidity	5 ÷ 95% non-condensing		
Weight	720 Kg	1580 Kg	1630 Kg
STANDARDS			
EMC	EN61000-6-3, EN61000-6-2, EN61000-3-11, EN61000-3-12		
Safety	EN62109-1, EN62109-2		
Directives	Low Voltage Directive: 2006/95/EC, EMC Directive: 2004/108/EC		
Grid management	ref. SIRIO K80 HV	CEI 0-16, A70, Real Decreto 413/2014, PO12.3	

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